REMARKS

The claims pending and under examination in this case are claims 1-3 and 7-14.

The rejection of claims 1-3 and 7-14 under 35 U.S.C. § 112, second paragraph for being indefinite is respectfully traversed in view of the amendment which accompanies this Response. The language criticized by the Examiner has been corrected to change "free from graphitizing" to "has not been graphitized".

The rejection of claims 1-3, 7, 8, 13 and 14 under 35 U.S.C. § 102(e) is respectfully traversed. The principal reference Liu et al. is cited by the Examiner for the teaching in column 5 of graphite as an electrode in a lithium cell. As the Examiner rightly points out, the use to which a composition or an article is put does not actually limit the product. The present claim 1 in this application is directed to a product which is a negative electrode of a secondary cell and it is further defined as being composed of graphite material which has adsorbed a single molecular layer of surface active material. The surface active material which is adsorbed on the graphite material is not graphitized by heat treatment, but consists of a starch derivative as defined in the claim or a viscous polysaccharide or water soluble cellulose derivative or synthetic resin. Liu et al. teaches use of a graphite powder embedded into a crosslinked polymer. The composite carbon powder with the crosslinked polymer is then heat treated at an elevated temperature from 700-1,600°C.

With this amendment, the claims are now directed to a negative electrode which is composed of a graphite material and which has adsorbed or coated with a single molecular layer of surface active material which has not been graphitized and which consists essentially of at least one of those derivatives from starch or other substances as set forth in claim 1. The claims are now distinguished from Liu et al. This principal reference, Liu et al., describes a graphite core coated with a carbon precursor resin which is subjected to high heat treatment and thus forms a layer of carbon material which is not graphitizable. The graphite material of Liu et al. has two layers, one consisting of graphite and a second which is not graphitizable carbon. In contrast, the present claims are directed toward a single molecular layer of surface active material that has not been graphitized by heat treatment and is specified as essentially certain starch derivatives and other resin materials as now defined in the claims.

Claims 1-3, 7, 8 and 11-14 are rejected under 35 U.S.C. § 102(e) as being anticipated by the abstract of the Japanese Patent 09147916. This reference does not disclose the presently claimed negative electrode of a lithium ion secondary cell as limited by the language of claim 1 and the claims depended thereon. The graphite material which composes the negative electrode has adsorbed or coated with a single molecular layer of surface active material that has not been heat treated and is

limited to the specific derivatives of starch or polysaccharides or cellulose derivatives and water soluble synthetic resins as defined in claim 1.

In the Japanese patent reference, a carbon article is used such as natural graphite in the building up of a negative electrode where the electrolyte is a lithium salt and a layer of solid particles with a water soluble polymer is formed where conductive particles may be contained in addition to the solid particles and the water soluble polymer. It is noted that the layer is 1-40 micrometers in thickness and an inorganic chalcogenide particle is feasible for the solid particle. This is not the same as what is being claimed in the present application. The presence of chalcogenide particles in the electrode described in the Japanese reference is a difference which is significant and distinguishes the presently claimed electrode from that of the reference. Claims 9-14 are directed to specific graphite materials for the negative electrode and are distinguishable from both references since the coating is a single molecular layer and is not heat treated to the point of graphitization such as is seen in the Liu et al. reference and the "consisting essentially" language essentially limits the coating adsorbed on the graphite to the materials specified in claim 1 and avoids any presence of chalcogenide as well as other substances.

In view of the foregoing argument and amendments,

reconsideration of the rejection of the claims and favorable action is respectfully solicited.

Should the Examiner wish to contact Applicants' representative, he may do so by telephoning Edward H. Valance, Reg. No. 19,896, at (703) 205-8000 in the Washington Metropolitan area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKING TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph on page 1, lines 6-14 has been amended as follows:

A method of producing graphite powder for a negative electrode of a lithium ion secondary cell excellent in discharge/charge efficiency (Coulomb efficiency) and having a high capacity retention rate, wherein 0.01 to 10 wt% (on the basis of the graphite material) of a starch derivative having $C_6H_{10}O_5$ as a basic structure or other surface active materials are allowed to be [absorbed] adsorbed by or to coat the surface of a graphite material for a negative electrode capable of occluding and releasing lithium ions and furthermore at least one kind of metal elements selected from the group consisting of lithium, calcium, magnesium, sodium and potassium is added.

The paragraph on page 4, lines 10-24 has been amended as follows:

Another aspect of the present invention is to provide a method for producing the graphite powder for negative electrodes of lithium ion secondary cells, which method comprises the steps of adding graphite powder into an aqueous solution of a surface active effect material; dispersing the mixture with stirring; then

filtering and drying the mixture, thereby obtaining the graphite material, in which 0.01 to 10 wt.% on the basis of the graphite material, of a surface active effect materials are [absorbed] adsorbed or coated. The above surface active effect material is, as described above, at least one member selected from the group consisting of starch derivatives having a basic structure of $C_6H_{10}O_5$, viscous polysaccharides having a basic structure of $C_6H_{10}O_5$, water-soluble cellulose derivatives having a basic structure of $C_6H_{10}O_5$ and water-soluble synthetic resins and the above graphite powder is exemplified by natural graphite, artificial graphite, kish graphite, mesophase carbon micro-beads (MCMB), mesophase carbon micro-fiber (MCF) and resin carbonized graphite which are able to occlude and release lithium ions.

IN THE CLAIMS:

The claims have been amended as follows:

Claim 1. (Four times amended) [In a graphite material for the] A negative electrode of a lithium ion secondary cell which is composed of graphite material [is capable of] for occluding or releasing lithium ions, [the improvement] wherein said graphite material [absorbs] has adsorbed or is coated with a single molecular layer of surface active material that [is free from graphitizing] (1) has not been graphitized by heat treatment and [consisting] (2) consists essentially of at least one member

selected from the group consisting of starch derivatives having a basic repeating unit structure of $C_6H_{10}O_5$; viscous polysaccharides having a basic repeating unit structure of $C_6H_{10}O_5$; water-soluble cellulose derivatives having a basic repeating unit structure $C_6H_{10}O_5$, and water-soluble synthetic resins.

Claim 12. (Thrice amended) The [graphite material for the] negative electrode according to claim 1, wherein said [graphite material is coated with] water-soluble synthetic resins <u>are</u> selected from the group consisting of water-soluble acrylic resin, water-soluble epoxy resin, water-soluble polyester resin, and water-soluble polyamide resin.